

CHANGING SUPPRESSION

Bettina McDowell, the General Manager of the International Water Mist Association, talks to IFB about the benefits of water mist as a form of fire suppression



BETTINA MCDOWELL
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MIST ASSOCIATION

The International Water Mist Association (IWMA) is the first association of its kind dedicated exclusively to water mist firefighting and related technologies. The IWMA was founded on 4th April 1998 and began maintaining a permanent office at the beginning of 2000. From the IWMA's international headquarters in Hamburg, Germany, it supports the continued development, research and applications engineering of generic water mist systems. IFB sits down with Bettina McDowell, General Manager, IWMA to find out why water mist is so efficient and effective against fire.

WHAT SETS THE INTERNATIONAL WATER MIST ASSOCIATION (IWMA) APART FROM OTHER FIRE SAFETY LEADERS' ORGANISATIONS?

Every organisation is unique due to where the people in it come from and where they are headed. IWMA represents manufacturers, installers, distributors, approval bodies, educational and research institutes etc. involved in a technology which is not new, but which received the all-decisive boost just over

three decades ago. Our members had to find their place in a well-established surrounding based on theories that I would say were and still are expandable. To understand water mist, one has to look at firefighting from a different angle and it is one of our main tasks to invite those involved in firefighting to change their perspective. This is not always easy, but the water mist community is ambitious and persistent – without being too pushy. We believe that the main question has got to be: which is the best firefighting method for any one application? And the fact is that in many cases it is either water mist or water mist is one of the most suitable choices.

AFTER A 12 MONTH BREAK DUE TO THE COVID-19 PANDEMIC THE WATER MIST COMMUNITY MET IN WARSAW IN OCTOBER 2021 FOR THE 20TH INTERNATIONAL WATER MIST CONFERENCE. WHAT WAS IT LIKE TO MEET AGAIN?

First of all, I must say that I was amazed about the number of registrations. At the end of the day, we had as many delegates in the conference room as

always – among them many new faces which was great. I think everybody was happy – after 18 months of travel restrictions and hardly any opportunity to network – to renew contacts, to form new business relationships and to have the odd chat about this and that. A while ago we talked about whether it would make sense to meet every other year, but the current situation and the year without this event have shown us that this is not an option.

WHERE AND WHEN WILL THE 21ST INTERNATIONAL WATER MIST CONFERENCE TAKE PLACE?

The 21st IWMC and Exhibition will take place on 9th and 10th November at the Elba Madrid Alcalá Hotel and like in Warsaw, IWMA will again offer special prices for locals. This is a great opportunity for Spanish firefighting experts who would like to learn more about the technology – but of course for everybody else from all other parts of the world as well. The call for papers has been released and can be downloaded from the IWMA webpage. The abstract deadline is 16th May – the day when also the conference webpage will be activated, and the ticket sale starts – and on 1st July the conference programme will be published. We will again, I am sure, have two days filled with interesting and informative presentations on water mist in action and also on research and testing. And we will invite the winner of the IWMA Young Talent Award.

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CASE STUDY: High-rise luxury hotel chooses Danfoss technology

Danfoss High Pressure Pumps (HPP) is a fast-growing division of the Danfoss Group that produces high-pressure pumps and valves for water mist fire suppression systems. In 2019, Danfoss supplied Hotel Alsik, in Sønderborg, Denmark, with PAH high-pressure pumps for a high-pressure water mist system. The low-maintenance system safeguards the entire 19-story structure.

The challenge: Power a high-pressure water mist system that climbs 70 m and covers 24,500 m². High-pressure water mist systems have many advantages compared to traditional wet pipe sprinkler systems, especially for high-rise buildings. They save space by eliminating the need for large-diameter water pipes and reservoirs. And if a fire does break out, the fine water mist suppresses flames with less water damage and better protection of glass facades.

In addition to utmost reliability, engineers also determined that low maintenance and long service intervals were critical parameters for this project.

The solution: Eight Danfoss PAH 80 pumps that deliver 120 bars of reliable pressure. Project engineers selected Danfoss PAH high-pressure pumps due to their reliability, industry-leading dependability, and low maintenance. The only lubrication they need is the pumped medium – water – and they require no maintenance for the first 8,000 operational hours and very little after that.

To ensure redundancy for fail-safe performance, engineers specified two identical pump units, each with four high-pressure PAH 80 pumps that deliver 120 bars of reliable pressure.

The results: Low-maintenance peace of mind. Installation of the high-pressure water mist system was simple. Since opening in 2019, Hotel Alsik's fire suppression system has fortunately not yet been called on to extinguish any fires, but maintenance and test procedures have been predictably problem-free.



maintenance of all types of fixed land-based water mist systems. However, the EN series consists of 17 parts, parts 2 to 17 being acknowledged test protocols water mist manufacturers have to test their systems against. Some of these have been published (parts 3, 8, 9, 14, 15, and 16), some are in the pipeline to be published very soon (parts 10 and 17) and the others are also on a good way (parts 2, 4, 5, 6, 7, 11, 12 and 13). Annex A provides a guideline for developing representative fire test protocols for how to undertake large-scale fire testing to prove ability to control, suppress or extinguish fires. But this is only the beginning.

Fire consultants, designers and installers of water mist systems now have a standard they can use and base their work on not unlike the standard for sprinkler systems, the key difference being that water mist is performance-based, not stipulating a minimum water density required. Now, with the European standard covering land-based applications in place, we can see the interest growing in the technology for

WHAT IS THE IWMA YOUNG TALENT AWARD? WHAT IS ITS PURPOSE AND WHO DOES IT GO TO?

IWMA honours the work of young researchers and scientists with this award. In 2019, the prize went to Topi Sikanen, who in Berlin presented his Ph.D. thesis entitled: "Simulation of transport, evaporation and combustion of liquids in large-scale fire incidents". There was no award ceremony neither in 2020 nor 2021, but we are hoping for the best for 2022 in which the prize will go to the author of the best master thesis. Deadline to hand in synopses is 29th April. So far, we have received three applications

which will be evaluated by the IWMA scientific council. The winner will – as I have said – be invited, will get a speaker slot on day two, will receive a one-year free membership and a prize money of 1,000 Euros.

HOW HAVE THINGS BEEN GOING FOR WATER MIST IN EUROPE AFTER THE PUBLICATION OF EN 14972-1:2020 IN DECEMBER 2020?

Although water mist has steadily gained a substantial market share in recent years, the publication of the standard is a major milestone. The document specifies requirements and gives recommendations for the design, installation, inspection and

ASK THE EXPERT

building protection. Manufacturers have indeed reported that they experience an increased demand for information and training sessions from fire consulting firms, designers and major sprinkler installers.

DOES THE SITUATION FOR WATER MIST VARY IN THE SINGLE EUROPEAN COUNTRIES?

Yes, most definitely. In some countries like Norway, the most sprinklered country in the world per head, water mist now represents ten per cent of the overall residential sprinkler market – with an ongoing upward trend. Other countries have difficulties in accepting water mist and still shy away from fully supporting this technology. A main issue is that water mist is – as mentioned – a performance-based technology which means that you will always get a bespoke system for your application which is based on a large-scale fire test – not on computer simulation – because water mist is not a one-fits-all concept! Some find that difficult to fathom although the European standard depicts this concept very well as it is divided into part one – which describes how the manufacturers' manuals must be written and parts 2 – 17, the test protocols.

THERE ARE DIFFERENT HAZARD CATEGORIES. HOW MANY BOXES REGARDING THESE CATEGORIES DOES WATER MIST TICK?

The chart which shows the classes of fire, i.e. classes A to D as well as electrical and class F fires, traditionally stated that water-based fire suppression systems should only be used for class A fires which involve combustible materials such as wood, paper etc. The updated version of this chart differentiates between traditional sprinkler systems and water mist systems – both obviously being water-based systems. However, the ways water mist and sprinkler droplets interact with a fire are miles apart. The key is the size of the droplets.

With large numbers of small droplets, a water mist system reduces the heat, depletes the oxygen in the seat of a fire and also affects the 3rd side of the fire triangle as it wets the burning material and surroundings. As a result, water mist systems can be used for all classes of fire but fires involving burning metals, which by the way goes for all water-based systems. Anyway, every fire suppression system has its limits, but water mist ticks more boxes than any other kind of fire suppression system.

WHAT ARE IWMA'S STRATEGIC AIMS FOR THIS YEAR?

2022 will be a very active year for us. There will again be more events, hopefully. From 20th to 25th June, many involved in the firefighting industry world will be in Hanover for Interschutz, just like IWMA. Chances are very high that IWMA will also have a stand at Feuertrutz in Nuremberg on 29th and 30th June. And then there is of course Fire Sprinkler International in London on 31st May and 1st June which will incorporate a session dedicated to water mist that I will chair. Apart from that, we have started or are about to start several projects and initiatives. We have, for example, started the IWMA UK Water Mist Initiative to help promote water mist in Great Britain which is one of the European countries lagging behind.

We are also in preparation of a joint project with FRIC – the Fire Research and Innovation Centre at RISE Fire Research in Norway – to look into sprinkler reliability. Especially water mist manufacturers have done a lot of comparison tests over the years, and we are planning to evaluate that data. At the same time, we will start collecting data on fire incidents in buildings that are protected with water mist systems. So, at the end of 2022, many more people will know a whole lot more about water mist and water mist will have an even better standing in the firefighting world.



ANYTHING ELSE TO NOTE?

Yes, indeed. We are very excited about Mr. Kemal Sarp Arsava having joined the IWMA scientific council. Mr. Arsava works for RISE Norway. He graduated from the Worcester Polytechnic Institute, USA, with a Ph.D. degree in Civil/Structural Engineering. Before starting his job at RISE he worked for the Worcester Polytechnic Institute and for The US Army Cold Regions Research and Engineering Laboratory. His main competences include pool fires, oil spill response and large-scale fire experimentation and he has an extensive list of publications under his belt. And I am sure he is also very excited about his first two jobs: evaluating the applications for the IWMA Young Talent Awards and the abstracts for the conference in Madrid. **FB**

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